

Analisis Polimorfisme Gen *Insulin-like Growth Factor-1* (IGF-1) pada Pertumbuhan Ayam F₅ Golden Kamper (*Gallus gallus domesticus*)

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INTISARI

Ayam Golden Kamper merupakan ayam hasil persilangan ayam pelung dan ayam *layer* dengan produktivitas telur serta daging yang baik. Gen *Insulin-like growth factor-1* (IGF-1) merupakan salah satu faktor yang mempengaruhi kecepatan pertumbuhan ayam karena berperan penting dalam pertumbuhan dan perkembangan tulang serta otot pada ayam. Penelitian ini dilakukan untuk mempelajari karakter ayam F₅ Golden Kamper serta menganalisis gen *IGF-1* untuk mengetahui pengaruhnya terhadap pertumbuhan ayam. Penelitian dilakukan dengan mengawinkan ayam betina dan jantan F₄ Golden Kamper, pemeliharaan ayam indukan dan DOC, koleksi telur, pengambilan data fenotipik, koleksi darah, isolasi DNA, amplifikasi DNA, elektroforesis, serta *sequencing*. Parameter yang diamati yaitu bobot DOC selama tujuh minggu pertama, karakter fenotipik kualitatif dan kuantitatif, dan polimorfisme gen *IGF-1*. Analisis data dilakukan menggunakan *software* Microsoft Excel, *Genestudio*, MEGA11, dan IBM SPSS 25. Data hasil sekuensing diolah dengan aplikasi *Genestudio*, alignment dengan MEGA11, serta asosiasi genotipe-haplotipe menggunakan SPSS (korelasi *Pearson* dan uji F Regresi Linear). Hasil menunjukkan polimorfisme penanda molekuler gen *IGF-1* terdapat pada 12 titik polimorfisme terjadinya mutasi. Mutasi tersebut meliputi mutasi substitusi pada 4 titik dan mutasi insersi pada 8 titik. Hasil penelitian menunjukkan bahwa polimorfisme gen *IGF-1* tidak memiliki korelasi dan pengaruh yang signifikan terhadap bobot ayam F₅ Golden Kamper. Nilai koefisien *inbreeding* yang didapatkan adalah 0,375. Individu ayam F₅ Golden Kamper memiliki keseragaman genetik dalam suatu populasi yang rendah.

Kata kunci: ayam, gen *IGF-1*, koefisien *inbreeding*, pertumbuhan

Polymorphism Analysis of the *Insulin-like Growth Factor-1* (*IGF-1*) Gene Encoding Growth in F₅ Golden Kamper Chicken (*Gallus gallus domesticus*)

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ABSTRACT

Golden Kamper Chicken is a chicken from crossing between pelung and *layer* chickens that have good meat and egg productivity. *Insulin-like growth factor-1 (IGF-1)* gene is one of the factor that affects the speed of chicken growth because it plays an important role in the growth and development of bones and muscles in chicken. This research aim to study the character of F₅ Golden Kamper chickens and to analyze the *IGF-1* gene to determine its effect on chicken growth. The research will be done by hybridising F₄ Golden Kamper hens and males, raising broodstock and DOC, egg collection, phenotypic data collection, blood collection, DNA isolation, DNA amplification, electrophoresis, and sequencing. Parameters that will be observed are DOC weight for the first seven weeks, qualitative and quantitative phenotypic characters, and polymorphism of the *IGF-1* gene. Data analysis was performed using Microsoft Excel, *Genestudio*, MEGA11, and IBM SPSS 25 software. Sequencing data were processed using the *Genestudio* application, alignment with MEGA11, and genotype-haplotype associations using SPSS (*Pearson* correlation and Linear Regression F test). The results showed that the molecular marker polymorphism of the *IGF-1* gene was found at 12 mutation points. These mutations include substitution mutations at 4 points and insertion mutations at 8 points. The results showed that the *IGF-1* gene polymorphism had no correlation and had a significant effect on the weight of F₅ Golden Kamper chickens. The inbreeding coefficient value obtained is 0,375, shows that individual F₅ Golden Kamper chickens have low genetic uniformity in a population.

Keywords : chicken, growth, *IGF-1* gene, inbreeding coefficient